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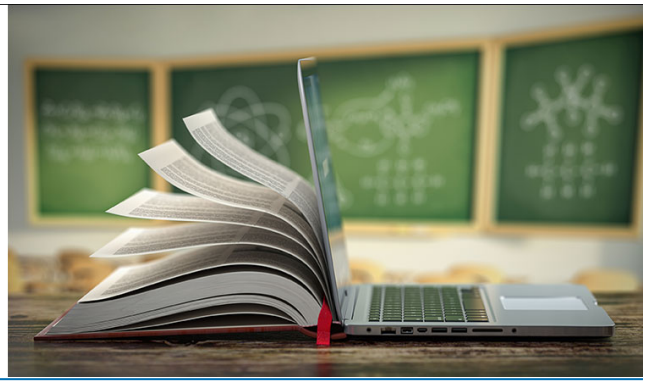

Technosphere Thinking in the Transformations of Earth Sciences

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Abstract. The paper focuses on identifying factors of influence of technosphere consciousness on the state of Earth sciences. The comparative analysis of current philosophical and scientific advances showed changes in a status of technosphere consciousness in culture. The authors formulated a hypothesis on a fusion of scientific rationality of Earth sciences with an axiological area of culture. A special methodology was developed to trace and demonstrate a determination influence of technosphere consciousness on the logic of development of Earth sciences and the state of communication processes in society. The authors described consequences of risks occurred as a result of strengthening the independence of technosphere consciousness and modeled opportunities of their minimization. It was proved that in the information communication society technosphere consciousness could form a new paradigm foundation for Earth sciences. The authors described a special character of the correlation between the state of technosphere consciousness, a level of development of technosphere and the status of Earth sciences. They determined key areas for negative consequences of blurring semantics of technosphere consciousness.

1. Introduction

Contemporary information society fundamentally changes the process of human life. This includes not only everyday aspects, but also attributive characteristics of being to a significant extent. For instance, now space-time parameters of existence are significantly transformed. As social time tends to accelerate and social space is subject to blurring the boundaries, both space and time become multilayer. A multilayer property is complicated by the occurred new levels. In particular, a virtual level of existence of a social subject is eligible for a status, possessing equal rights in a variety of human realities. Factors connecting everything become science and technology. Thus, we may draw a conclusion about a sustainable functioning of new environment – technosphere. At the same time, the expansion of levels of being of social phenomena aggravates problems of safe existence of the subject. Consequently, technosphere thinking becomes an essential feature of the civilization and a universal tool of positioning in the world.

As a change in status characteristics has a whole range of negative consequences, identifying features of mechanisms, sources of, and reasons for technosphere thinking dominating in current social development remains currently important in theoretical studies. Such analysis contributes to determining both creative and destruction power of a technocratic factor of development, while identifying risks of technosphere safety. We may mention relevant research papers by V.A. Chanturiya, I.V. Shadrunova, V.A. Zhilina, N.N. Orekhova, O.E. Gorlova, E.V. Zelinskaya, P.K. Fedotov, N.A. Tolmacheva, E.G. Ozhogina, T.V. Chekushina, N.L. Medyanik, K.A. Vorobyev, N.N. Ryspanov [1], M. Boholm [11], R. Trappes [5], R. Hillerbrand, C. Werker [3] and others.

2. Materials and methods

It should be noted that today a theoretical analysis of technosphere safety remains conventional and mainly focuses on minimizing risks of using environment by people. In particular, some papers describe a correlation between operating natural regularities and recent determination factors, representing objectification of a rational understanding of the development laws of the Earth [1]. An innovative point of the studies is a common focus of highly specialized analyses of specific areas of relations between human and nature on reproducing the integrity of the world-human system. This results in qualitative changes of semantics of technosphere thinking that changes a general logic of development of Earth sciences. For example, it is significant that now mining waste is not a simple factor of environmental pollution, but an originally potential factor of development of technologies [2].

The above transformations determine the methodology of such analysis of the state of present technosphere thinking as a basis for Earth sciences. Regarding a theoretical principle of the unity of historical and logical issues, independence of technosphere as an essential feature of the social 21st century reveals as singular of general features of human involvement in the world. In this respect, technical thinking as prerequisite for the present technosphere way of meaningfulness of a social subject in its essence is a unification of syncretic character of mythological thinking and transcendence of a religious worldview. A SWOT analysis shows that in communication society such feature of technosphere thinking gives rise to an essential contradiction between a value-based aspect of technical sciences in respect of the subject (internal environment) and industrial needs (external environment) [3]. Meanings of human activities are semantically transformed. Thus, the analysis is performed according to the principle of rising from the abstract to the concrete.

3. Results and discussion

3.1. Technosphere thinking at the core of transformed social reality of human

The research on technosphere thinking shows real risks of a gap between natural social bonds. Symbiosis of complex social systems and complex technical systems can provoke a gap in social communications. In particular, in case of destructive situations leading to consequences of functioning robots with a high degree of independence, neither robots, nor developers can pretend to moral responsibility. A social subject reveals social emptiness, when its wish of retaliation faces no relevant subjects for compensatory nature of fault.

As a result, technosphere thinking starts virtualizing this breakdown that determines new methods of structuring social reality. Current studies of social philosophy fix the origin of deontological intuitions [4]. The feedback shows transformed conventional mythological and religious aspects of technosphere thinking. In this regard, the most illustrative is infrahumanisms [5], which “remelts” incompatible problems: from problems of childhood to threats of AIDS through intermediate chains of nonhuman primates, aliens and xenotransplantation. A compilation of meanings begins to pretend to a new level of existence, resulting in the demarcation of danger and safety. The latter one is reflected in all spheres of social reflection. In particular, theory gives a new meaning to Kant’s well-known questions and expands the last one in a peculiar way: what a human is versus those that are built on artificial intelligence. A range of problems on the issues of the well-known categorical imperative is

otherwise determined. It bears another meaning, whether animals and artificial intelligence systems may pretend to Kant's concept of dignity or there is a large gap between humans, animals and artificial intelligence systems in respect of their ability to be subjects of dignity [6, 7]. But reflection is always directed towards a subject that is reflecting. Having lost the privilege of being chosen in the way of expressing the attitude to the world, a human loses the meaning of own independence. In the context of Earth sciences, this is a significant fact that the problems of technosphere safety are found in a situation of uncertainty.

3.2. Paradox nature of present technosphere thinking: risk of the origin of parasitizing quasi-scientific knowledge

The change in reflection processes in the logic of the development of the subject of Earth sciences reveals the reasons for the paradox nature of present technosphere thinking: being technogenic and, consequently, rational by necessity, it is one of key sources of producing quasi-scientific and nonscientific knowledge. Moreover, in terms of philosophy, it is technosphere thinking that becomes a kind of a substantial beginning of a new mythological explanation of the world. For example, theoretically, the current situation with the pandemic is conclusively explained by the origin of a virus as a result of the angry reaction of the Earth to human actions. Mother Earth needs care. This idea is proved by a direct practical test of technogenic thinking: if I do not care about my car, it will send me a message in the form of a breakdown; so, the Earth sends a message to a human through a virus [8]. A peculiar return to teleological explanations of nature according to the law of the negation of negation fills teleology with new content. Once again, it mixes whatever: religion, an original goal-setting role of nature, the divine origin of a human, and physical processes of the devastation of animal species [8].

3.3. Independence of technosphere consciousness in culture as a determination factor of the state of technosphere

As part of the analysis of the state of Earth sciences, the most significant problems are the boundaries and specific character of independence of technosphere consciousness. It is crucial to note that indirect evidence of independence of technosphere as a natural shell of the Earth is the transformation of technosphere thinking into a significant determination social factor. The present era clearly demonstrates the expansion of a sphere of influence of technologies beyond production. If in the 20th century the development of science and technology changed the quality of consumer life, now it transforms a field of social interactions. In particular, today these seemingly purely technical solutions and advances determine the emerging innovative element of legal reality – the soft law system. One of reasons for the emerging legally non-binding norms, but keeping the rigid normativity of customary law is the development of nanotechnologies. Originally, nanotechnologies fit into a contradiction, which is usual for the technocratic development of the world: the higher the potential for increasing labor productivity, the wider and stronger the risk zone in respect of human. But in the age of globalization, modernization of society, forms of social relations and types of collaboration are no longer fitted into conventional legal procedures. Thus, problems of nanotechnologies cross conventional ecological boundaries and begin to extend a strong influence on the existing legal sphere. The need for controlling a field of development and application of nanoform substances reveals disadvantages and narrowness of the existing regulatory framework. Consequently, in the feedback research areas of studies on this field get an additional incentive, which, in its turn, influences semantics of technosphere thinking [9].

An essential fact in the general logic of the development of rational studies on the regularities of the Earth is the potential transformation of the reconstruction of cause and effect relationships. Formed technosphere thinking allows us to state a special state of rationality, namely causal impotence [10]. It should be noted that in addition to a significant revision of the foundation of scientific rationality, this indicates a fusion of the area of Earth sciences with a general axiological area of culture. In the feedback many theoretical studies demonstratively show the influence of scientific discourses on

discourses of promises stated in other parts of society. The analysis of a wide-ranging discussion in the Swedish media about the nature of graphene is indicative [11]. A futuristic focus on technosphere thinking triggers, on the one part, charm about a scientific and technical progress, and, on the other part, steadily forms a new paradigm of a negative removal of specific technologies.

4. Conclusions

Social globalization processes extend a considerable influence on science. On the one part, in information society science steadily claims for a determination factor of development, and, on the other part, science undergoes changes contributing to the extension of boundaries of its influence beyond conventional rationality. Due to independence of the existence of technosphere and in view of the development of interdisciplinary studies in a scientific field, today Earth sciences are gradually acquiring the status of universal ones. The transformation is based on the regularities of the development of technosphere thinking. The analysis of theoretical studies on technosphere thinking conclusively shows that such thinking is capable of forming a new paradigm foundation for the development of Earth sciences in its own independence. One of the features of this paradigm is a futuristic prediction of the existence of the Earth correlating with the existence of human. At the same time, technosphere consciousness changes gnoseological and epistemological components of Earth sciences. Deontological intuitions, changed processes of reflection provoke a fusion of scientifically rational knowledge with axiological problems. In addition to a conventional appeal to morality, this determines the expansion of the risks of losing the demarcation of types of knowledge and, as a result, contributes to the emergence of many types of pseudo-knowledge and pseudoscientific speculations. Again, in the conditions of immersion of Earth sciences in communication flows of society, scientific discourses influence the state of the social sphere. In this regard, the most obvious example is the emergence of the soft law system.

Studies on these processes allow us to conclude that in current conditions Earth sciences not only determine the development of a scientific and technical progress, but also constitute an essential factor of the development of culture in general. In particular, regarding an independent and unique character of technosphere thinking, Earth sciences adapt to changes of environment as a subject of their own studies. At the same time, technosphere consciousness minimizes the risks of a gap between scientific knowledge and a constantly changing subject of science. As a result, understanding the trends in the influence of technosphere consciousness on the logic of the development of Earth sciences can protect them from negative aspects and increase efficiency of specific studies.

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